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Description

The present invention relates to collapsible sealed containers to dispense liquid products, and more particularly to such a container having a flexible conduit incorporated therein and to a method of making same.

Many exemplary collapsible containers are available in the prior art which permit the extraction of a product from the container. Most of the containers use conventional dip tubes including an elongate cylindrical tube which includes an upper portion connected to a valve and a lower portion positioned within the product to be extracted from the container. For example, Daniels, U.S. Patent No. 3,171,571 discloses a conventional bag-in-box type of dispensing package including a dip tube.

Another example of a dip tube positioned within a flexible bag is disclosed by Kramer, et al. U.S. Patent No. 2,859,899. The dip tube includes perforations through which the syrup or other material positioned within the flexible bag is sucked therefrom by means of a pump. U.S. Patent 4,286,636 to Credle discloses a collapsible bag with an extruded dip tube including at least one channel in the peripheral surface of the dip tube and extending along substantially the entire length of the dip tube. As a vacuum or suction is applied to the dip tube by a pump, initially all of the air within the collapsible bag is extracted therefrom. Subsequently, the liquid product is dispensed out of the collapsible bag and the bag collapses around a portion of the dip tube which is no longer surrounded by the liquid product.

US 3081911 discloses a drainage fitting for a collapsible container in which fingers extend from the spout into the interior of the container to prevent the container wall closing off the spout before the liquid is dispensed. Such an arrangement would not, for example, prevent folding of the container isolating pockets of fluid.

One of the disadvantages of the prior art collapsible containers including dip tubes is that they require the insertion of a dip tube, and thus of an additional step in the manufacture of the filled container. Additionally, because of the geometry of the dip tube and the collapsible container, the insertion of the dip tube could not be handled through automated means, but rather requires manual insertion.

Summary of the Invention

Accordingly, it is a primary object of the present invention to provide a flexible conduit for a collapsible bag which can be inserted during the formation of the bag and requires no manipulative steps after filling of the collapsible container.

According to the invention, there is provided a collapsible container comprising a flexible bag adapted to be filled with a liquid to be dispensed therefrom, a spout having a spout opening there-through, and a liquid passage means in liquid flow communication with the spout opening and secured inside of the bag, the liquid passage

means defining a liquid flow channel open to the interior of the container through at least the major part of the flow channel, whereby liquid may be dispensed from substantially all of said container as it collapses, characterised in that said bag is formed from opposed side walls, and in that the liquid passage means are flexible and are positioned between said two opposed side walls prior to or during formation of said side walls into said bag.

The preferred embodiment provides at least one pair of flexible substantially parallel rib members disposed adjacent to an interior wall of the collapsible container. The flexible rib members are positioned within a collapsible bag and substantially adjacent to an annular spout member. Initially, air within the collapsible bag will be drawn therefrom. Subsequently, the liquid product disposed within the collapsible bag will flow through a channel formed by the adjacent ribs and the collapsible bag will collapse around the rib members. Progressively, as the liquid product is removed from the collapsible bag, the bag will continue to collapse around the rib members until all of the liquid product is dispensed therefrom.

A further feature of the present invention is that the rib members can be disposed on a web which can be disposed between two flexible sheets which comprise a collapsible bag during the manufacture of the bag. The major advantage of this development is that it avoids substantial manipulative steps both in the manufacture and assembling of the collapsible container and in the filling and use of the bag.

Further scope of applicability of the present invention will become apparent from the detailed description given hereinafter. However, it should be understood that the detailed description of the invention and the specific examples, while indicating preferred embodiments of the invention, are given by way of illustration only, since various changes and modifications within the scope of the invention will become apparent to those skilled in the art from this detailed description.

Fig. 1 is an isometric, partially cut away front side view of a collapsible bag according to the present invention;

Fig. 2 is an enlarged cross sectional partial view of the collapsible bag including an annular spout adjacent to which are disposed a plurality of ribs according to the present invention;

Fig. 3 is an exploded view of an embodiment of the present invention; and

Fig. 4 is a lateral cross sectional view of a collapsible bag which illustrates the operation of the invention.

Detailed Description

A collapsible container 10 is used to dispense a liquid product therefrom. The collapsible container may be used in combination with a post-mix beverage system. Such a post-mix beverage system is disclosed in our U.S. Patent No. 4,014,461.

As illustrated in Figs. 1 and 2, the collapsible

container 10 is made of a pair of sheets of flexible material 12 and 14 joined together at their respective peripheries 16 and 18. The flexible sheets are joined in a sealed relationship throughout the periphery and in the case of flexible sheets made of thermoplastic material, this may be a seal achieved by means of heat sealing or suitable adhesive. The collapsible bag 10 includes an annular spout, or bag fitment 20 disposed through the flexible sheet 12 and attached thereto by means of an annular flange 22. The spout 20 may be of any desired geometry which can be adapted to fit into a coupling for a suction system. Indeed as would be obvious to a person of ordinary skill in the art, the spout 20 may be any shape including non-annular. As shown in more detail in Fig. 2, the flexible sheets 12 and 14 may comprise a number of plies, e.g. 24 and 26. In the preferred embodiment, two plies are used. Ply 24 is a web of 2 mil. (0.05 mm) EVA (ethylene vinyl acetate), disposed adjacent to second ply 26 which is a bonded web made up of the following three sheets: 2 mil (0.05 mm) EVA, 1/2 mil. (0.013 mm) metalized PET (polyethylene terephthalate), and 2 mil. (0.05 mm) EVA.

The collapsible container 10 includes at least one pair of ribs 30 disposed through the length of the collapsible container 10, shown in Fig. 1, and in relation to the annular spout 20 so that the pair of ribs 30 passes substantially adjacent to, and in line with the opening 21 of the annular spout 20. Although a pair of ribs is described, a single rib or protrusion 30 of sufficient height would be sufficient to achieve the objectives of the invention, although not as efficiently as a pair of ribs; alternatively an open groove may be formed on one of the walls. The ribs 30 are slight protrusions which are closely spaced together. The ribs 30 may be extruded onto the flexible sheet 14, or in the case of a two ply sheet, on the inner layer 24.

In the preferred embodiment, the ribs 30 are disposed on the flexible sheet opposite to the flexible sheet where the annular spout 20 is attached. However, the present invention will also encompass the placement of the ribs on the flexible sheet on which the annular spout 20 is disposed, which although not as efficient, also can provide significant advantages over the system shown in the prior art.

As illustrated in Fig. 3 another embodiment of the present invention includes a web strip 34 including at least one pair of ribs 30 disposed between the flexible sheets 12 and 14 and adjacent to, and in line with the annular spout 20. The web strip 35 should be made of compatible material with the flexible sheets 12 and 14 so that it can be bonded thereto. For example, if the inner ply of the sheets 12 and 14 is made out of EVA then the web strip 35 should be made of EVA or compatible material (e.g. low density polyethylene). The web strip 35 is attached at its ends to the flexible sheets 12 and 14 during the formation of the bag, when the adjacent sheets are secured at their periphery; thus, for example heat sealing of the adjacent flexible sheets 12 and 14 will also

achieve the heat sealing and fixation of the flexible strip web 34. Illustrated in Fig. 4 is the operation of the ribs 30. As the flexible container 10 collapses, it has a tendency to collapse somewhat unevenly, leaving pockets of liquid which may become isolated from the rest of the liquid in the container. The ribs 30 form a conduit which cannot be closed off by the atmospheric pressure on the walls of the flexible sheets 12 and 14. Thus, the entire inner chamber of the flexible bag remains in communication with the spout 20 at all times during the operation.

Claims

1. A collapsible container comprising a flexible bag (10) adapted to be filled with a liquid to be dispensed therefrom, a spout (20) having a spout opening therethrough, and a liquid passage means (30) in liquid flow communication with the spout opening and secured inside of the bag, the liquid passage means defining a liquid flow channel open to the interior of the container through at least the major part of the flow channel, whereby liquid may be dispensed from substantially all of said container as it collapses, characterised in that said bag is formed from opposed side walls, and in that the liquid passage means are flexible and are positioned between said two opposed side walls prior to or during formation of said side walls into said bag.

2. A container as claimed in Claim 1 wherein said liquid passage means are integrally formed with the wall of the bag.

3. A container as claimed in Claim 1 wherein said liquid passage means is an open groove formed integrally with said bag wall, the opening of which groove faces into the interior of said bag.

4. A container as claimed in Claim 1, 2 or 3 wherein said liquid passage means comprises at least one rib extruded on the inner surface of the bag wall.

5. A container as claimed in Claim 1 wherein said liquid passage means comprises a narrow elongate member having on one surface thereof means for providing at least one liquid channel open to the interior of said bag along substantially the entire length of said liquid channel.

6. A container as claimed in Claim 5 wherein said liquid passage means comprises a separately formed flexible web (34).

7. A container as claimed in Claim 5 or 6 wherein said liquid passage means are heat-sealed to the wall of the bag.

8. A container as claimed in any of Claims 4 to 7 wherein said liquid passage means comprises at least one pair of spaced apart ribs providing a liquid channel therebetween, the size and spacing of the ribs being such that the channel cannot be blocked by the opposing side wall as the container collapses.

9. A container as claimed in Claim 8 wherein said ribs are parallel to each other and extend longitudinally in the direction of said member.

10. A container as claimed in any of the preced-

ing claims wherein said liquid passage means extend in a straight line towards the opening when the bag is in its empty, prefilled, condition.

11. A container as claimed in any of the preceding claims, wherein said liquid passage means are disposed along the opposite wall to the spout, and extend at least to a position directly opposite the spout.

12. A container as claimed in any of the preceding claims, wherein the spout is annular.

13. A container as claimed in any of the preceding claims, wherein the container side walls are formed of flexible sheet material and are bonded together around their peripheries (16, 18).

14. A container as claimed in Claim 13 when dependent on Claim 6 wherein said container side walls and said web are heat-sealed together.

15. A method of making a collapsible container comprising a bag (10) for use in containing and dispensing a liquid and including a spout (20) having an opening through which the bag is to be filled and emptied, and said bag also including a liquid passage means (30) inside of said bag for providing a liquid channel open to the interior of said bag and in liquid flow communication with said spout opening as said bag progressively collapses against said liquid passage means, said method comprising the steps of:

(a) providing flexible bag wall means (12, 14) for use in forming said bag;

(b) providing a spout having an opening there-through;

(c) positioning said liquid passage means (34) having said liquid channel inside of said bag wall means prior to forming said bag wall means into a bag.

(d) positioning said liquid passage means inside of said bag wall means such that when said bag wall means are formed into a bag, said liquid channel of said liquid passage means will be in liquid flow communication with said spout opening; and

(e) forming said bag wall means into a bag with said spout being connected to a bag wall and with said liquid passage means being inside of said bag and fixed in said bag and with said liquid channel being in liquid flow communication with said opening in said spout.

16. The method as recited in Claim 15 wherein said step of positioning said liquid passage means inside of said bag wall means comprises positioning, inside of said bag wall means, an elongate, flexible member (34) having a liquid channel extending along its length, said liquid channel being open to the interior of said bag along its length.

17. The method as recited in Claim 16 wherein said bag is formed by heat sealing and including the step of heat sealing said member in place simultaneously with forming said bag by heat sealing.

18. A method of making a liquid containing package comprising a flexible bag (10) adapted to be filled with a liquid to be dispensed therefrom, said bag having a spout (20) through which said

bag can be filled and emptied and characterised by the step of locating a liquid passage means (30) inside of said bag and integrally forming it therein as an integral part of said bag simultaneously with the formation of said bag, said liquid passage means being in liquid flow communication with said spout for aiding the withdrawing of liquid from said bag and for providing a liquid passage out of said bag as said bag progressively collapses.

Patentansprüche

1. Zusammenlegbarer Behälter, bestehend aus einem zum Befüllen mit einer daraus abzugebenden Flüssigkeit vorgesehenen flexiblen Beutel (10), einem Spund (20) mit einer durchgehenden Spundöffnung und einer mit derselben in Strömungsverbindung stehenden und innerhalb des Beutels angebrachten Flüssigkeits-Leiteinrichtung (30), die einen Flüssigkeits-Strömungskanal bildet, der zumindest durch den überwiegenden Teil des Strömungskanales zum Inneren des Behälters offen ist, wodurch Flüssigkeit aus im wesentlichen dem gesamten Behälter bei seinem Zusammenlegen abgebar ist, dadurch gekennzeichnet, daß der Beutel von einander gegenüberliegenden Seitenwänden gebildet ist, und daß die Flüssigkeits-Leiteinrichtung flexibel ist und zwischen den beiden einander gegenüberliegenden Seitenwänden vor oder während der Bildung dieser Seitenwände in dem Beutel angeordnet wird.

2. Behälter nach Anspruch 1, dadurch gekennzeichnet, daß die Flüssigkeits-Leiteinrichtung mit der Beutelwand einstückig ausgebildet ist.

3. Behälter nach Anspruch 1, dadurch gekennzeichnet, daß die Flüssigkeits-Leiteinrichtung eine einstückig mit der Beutelwand ausgebildete offene Rinne ist, wobei die Rinne zum Beutelinernen hin offen ist.

4. Behälter nach Anspruch 1, 2 oder 3, dadurch gekennzeichnet, daß die Flüssigkeits-Leiteinrichtung zumindest eine an der Innenseite der Beutelwand extrudierte Rippe aufweist.

5. Behälter nach Anspruch 1, dadurch gekennzeichnet, daß die Flüssigkeits-Leiteinrichtung aus einem schmalen langgestreckten Glied besteht, das an einer seiner Seiten Mittel zur Bildung zumindest eines Flüssigkeits-Kanales aufweist, der im wesentlichen über seine gesamte Länge zum Beutelinernen hin offen ist.

6. Behälter nach Anspruch 5, dadurch gekennzeichnet, daß die Flüssigkeits-Leiteinrichtung aus einer getrennt gebildeten flexiblen Bahn (34) besteht.

7. Behälter nach Anspruch 5 oder 6, dadurch gekennzeichnet, daß die Flüssigkeits-Leiteinrichtung mit der Beutelwand heißversiegelt ist.

8. Behälter nach den Ansprüchen 4 bis 7, dadurch gekennzeichnet, daß die Flüssigkeits-Leiteinrichtung aus wenigstens einem Paar in gegenseitigem Abstand angeordneter Rippen besteht, zwischen denen ein Flüssigkeits-Kanal gebildet ist, wobei die Größe und der Abstand

derart bemessen sind, daß der Kanal bei Zusammenlegen des Behälters von der gegenüberliegenden Seitenwand nicht blockiert werden kann.

9. Behälter nach Anspruch 8, dadurch gekennzeichnet, daß sich die Rippen zueinander parallel und der Länge nach in Richtung des Gliedes erstrecken.

10. Behälter nach den Ansprüchen 1 bis 9, dadurch gekennzeichnet, daß die Flüssigkeits-Leiteinrichtung geradlinig zur Öffnung verläuft, wenn sich der Beutel in seinem leeren Zustand vor dem Befüllen befindet.

11. Behälter nach den Ansprüchen 1 bis 10, dadurch gekennzeichnet, daß die Flüssigkeits-Leiteinrichtung längs der dem Spund gegenüberliegenden Wand angeordnet ist und zumindest zu einer dem Spund unmittelbar gegenüberliegenden Stelle verläuft.

12. Behälter nach den Ansprüchen 1 bis 11, dadurch gekennzeichnet, daß der Spund ringförmig ist.

13. Behälter nach den Ansprüchen 1 bis 12, dadurch gekennzeichnet, daß die Behälter-Seitenwände aus flexiblem Bahnmateriel bestehen und entlang ihrer Umfangsränder (16,18) miteinander verbunden sind.

14. Behälter nach Anspruch 13 in Abhängigkeit von Anspruch 6, dadurch gekennzeichnet, daß die Behälter-Seitenwände und die Bahn miteinander heißversiegelt sind.

15. Verfahren zur Herstellung eines zusammenlegbaren Behälters, bestehend aus einem zur Verwendung zum Aufbewahren und zur Abgabe einer Flüssigkeit dienenden Beutel (10) mit einem Spund (20) mit einer Öffnung, durch die der Beutel befüllbar und entleerbar ist, und mit einer Flüssigkeits-Leiteinrichtung (30) innerhalb des Beutels, die einen Flüssigkeits-Kanal bildet, der zum Beutellinneren offen ist und mit der Spundöffnung in Strömungsverbindung steht, wenn sich der Beutel fortschreitend zur Flüssigkeits-Leiteinrichtung zusammenlegt, gekennzeichnet durch folgende Schritte:

(a) Verwendung flexibler Beutelwandungen (12, 14) zur Bildung des Beutels,

(b) Bildung eines Spundes mit einer durchgehenden Öffnung,

(c) Anordnen der Flüssigkeits-Leiteinrichtung (34) mit dem Flüssigkeits-Kanal innerhalb der Beutelwandungen vor der Bildung dieser Beutelwandungen in dem Beutel.

(d) Anordnen der Flüssigkeits-Leiteinrichtung innerhalb der Beutelwandungen derart, daß bei Formung der Beutelwandungen zu einem Beutel der Flüssigkeits-Kanal in Flüssigkeits-Strömungsverbindung mit der Spundöffnung steht, und

(e) Formung der Beutelwandungen zu einem Beutel, wobei der Spund an eine Beutelwand angeschlossen ist und die Flüssigkeits-Leiteinrichtung innerhalb des Beutels liegt sowie im Beutel befestigt ist und wobei der Flüssigkeits-Kanal mit der Öffnung im Spund in Flüssigkeits-Strömungsverbindung steht.

16. Verfahren nach Anspruch 15, dadurch gekennzeichnet, daß der Schritt des Anordnens

der Flüssigkeits-Leiteinrichtung innerhalb der Beutelwandungen im Anordnen eines langgestreckten flexiblen Gliedes (34) mit einem über seine Länge verlaufenden Flüssigkeits-Kanal innerhalb der Beutelwandungen besteht, welcher Flüssigkeits-Kanal über seine Länge zum Beutellinneren hin offen ist.

17. Verfahren nach Anspruch 16, dadurch gekennzeichnet, daß der Beutel durch Heißsiegeln gebildet wird und durch Einschluß des Schrittes, daß gleichzeitig mit der Formung des Beutels durch Heißsiegeln das Glied an seiner Stelle heißversiegelt wird.

18. Verfahren zur Herstellung einer eine Flüssigkeit enthaltenden Packung, bestehend aus einem zum Befüllen mit einer daraus abzugebenden Flüssigkeit vorgesehenen flexiblen Beutel (10) mit einem Spund (20), durch den der Beutel befüllbar und entleerbar ist, gekennzeichnet durch den Schritt des Anordnens einer Flüssigkeits-Leiteinrichtung (30) innerhalb des Beutels und einstückiges Ausbilden derselben darin als einstückigen Teil des Beutels gleichzeitig mit der Formung des Beutels, wobei die Flüssigkeits-Leiteinrichtung in Flüssigkeits-Strömungsverbindung mit dem Spund steht, um das Abziehen der Flüssigkeit aus dem Beutel zu unterstützen und einen Flüssigkeits-Kanal aus dem Beutel bei seinem fortschreitenden Zusammenlegen zu schaffen.

Revendications

1. Un récipient pliable comprenant un sac flexible (10) apte à être rempli d'un liquide qui doit être distribué depuis celui-ci, un déversoir (20) comportant une ouverture de déversoir qui le traverse, et un moyen de passage (30) de liquide en communication d'écoulement de liquide avec l'ouverture de déversoir et fixé à l'intérieur de la poche, le moyen de passage de liquide comportant un canal d'écoulement de liquide ouvert vers l'intérieur du récipient sur au moins la majeure partie du canal d'écoulement, grâce à quoi du liquide peut être distribué sensiblement à partir de tout ledit récipient lorsqu'il se plie, caractérisé en ce que ladite poche est formée à partir de parois latérales opposées, et en ce que les moyens de passage de liquide sont flexibles et sont positionnés entre lesdites parois latérales opposées avant ou pendant la formation desdites parois latérales opposées dans ladite poche.

2. Un récipient selon la revendication 1 dans lequel lesdits moyens de passage de liquide sont formés d'un seul tenant avec la paroi de la poche.

3. Un récipient selon la revendication 1 dans lequel lesdits moyens de passage de liquide consistent en une rainure ouverte formée d'un seul tenant avec ladite paroi de poche, l'ouverture de cette rainure étant tournée vers l'intérieur de ladite poche.

4. Un récipient selon la revendication 1, 2 ou 3 dans lequel ledit moyen de passage de liquide comprend au moins une nervure extrudée sur la surface intérieure de la paroi de poche.

5. Un récipient selon la revendication 1 dans

lequel ledit moyen de passage de liquide comprend un organe étroit allongé possédant sur au moins une de ses surfaces des moyens pour ménager au moins un canal de liquide ouvert vers l'intérieur de ladite poche sensiblement sur toute la longueur dudit canal de liquide.

6. Un récipient selon la revendication 5 dans lequel ledit moyen de passage de liquide comprend une âme flexible (34) formée de façon séparée.

7. Un récipient selon la revendication 5 ou 6 dans lequel lesdits moyens de passage de liquide sont scellés à chaud sur la paroi de la poche.

8. Un récipient selon l'une quelconque des revendications 4 à 7 dans lequel ledit moyen de passage de liquide comprend au moins une paire de nervures espacées entre elles ménageant entre elles un canal de liquide, la dimension et l'espacement des nervures étant tels que le canal ne puisse pas être bloqué par la paroi latérale opposée lorsque le récipient se plie.

9. Un récipient selon la revendication 8 dans lequel lesdites nervures sont parallèles entre elles et s'étendant longitudinalement dans la direction dudit organe.

10. Un récipient selon l'une quelconque des précédentes revendications dans lequel lesdits moyens de passage de liquide s'étendent en ligne droite vers l'ouverture lorsque la poche se trouve dans sa condition vide, avant remplissage.

11. Un récipient selon l'une quelconque des précédentes revendications, dans lequel lesdits moyens de passage de liquide sont disposés le long de la paroi opposée au déversoir, et s'étendent au moins vers une position directement opposée au déversoir.

12. Un récipient selon l'une quelconque des précédentes revendications, dans lequel le déversoir est annulaire.

13. Un récipient selon l'une quelconque des précédentes revendications, dans lequel les parois latérales de récipient sont formées d'une matière flexible en feuille et sont soudées l'une à l'autre autour de leurs périphéries (16, 18).

14. Un récipient selon la revendication 13 lorsqu'elle dépend de la revendication 6 dans lequel lesdites parois latérales de récipient et ladite âme sont scellées à chaud entre elles.

15. Un procédé de fabrication d'un récipient pliable comprenant une poche (10) à utiliser pour contenir et distribuer un liquide et comprenant un déversoir (20) comportant une ouverture à travers laquelle la poche doit être remplie et vidée, et ladite poche comprenant aussi un moyen de passage (30) de liquide à l'intérieur de ladite poche pour constituer un canal de liquide ouvert vers l'intérieur de ladite poche et en communication d'écoulement de liquide avec ladite ouverture de déversoir lorsque ladite poche se plie

progressivement contre ledit moyen de passage de liquide, ledit procédé comprenant les étapes consistant à:

(a) disposer des moyens de parois flexibles de poche (12, 14) à utiliser pour former ladite poche;

(b) disposer un déversoir comportant une ouverture qui le traverse;

(c) positionner ledit moyen de passage de liquide (34), qui comporte ledit passage de liquide, à l'intérieur desdits moyens de paroi de poche avant de former lesdits moyens de paroi de poche en une poche;

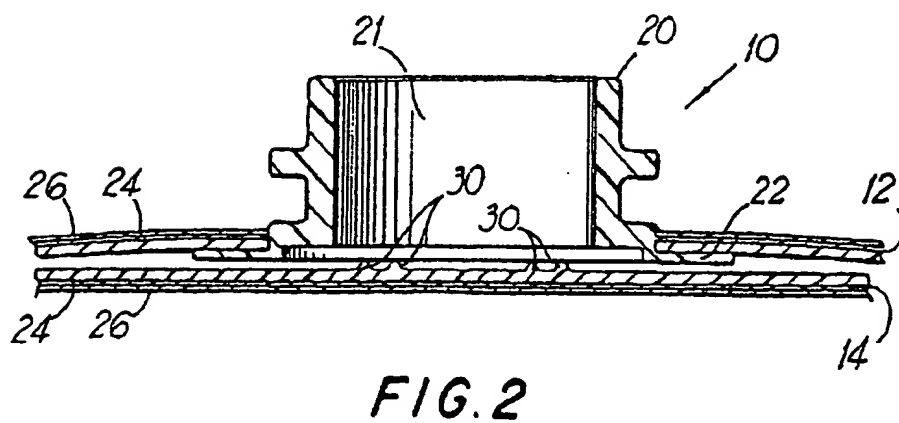
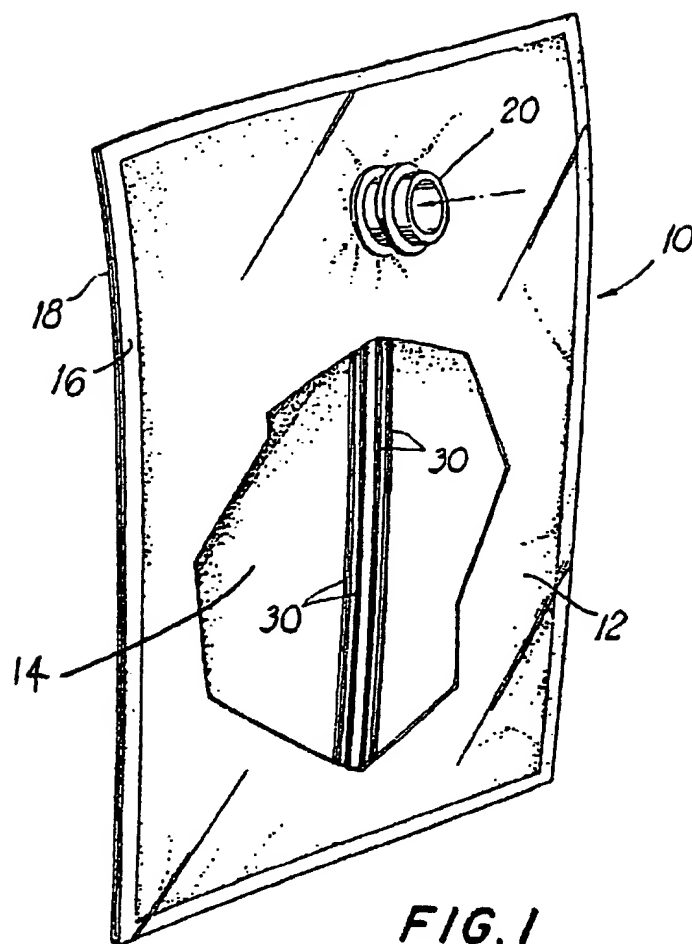
(d) positionner lesdits moyens de passage de liquide à l'intérieur desdits moyens de paroi de poche de telle façon que, lorsque lesdits moyens de paroi de poche sont formés en une poche, ledit canal de liquide desdits moyens de passage de liquide sera en communication d'écoulement de liquide avec ladite ouverture de déversoir; et

(e) former lesdits moyens de paroi de poche en une poche, ledit déversoir étant relié à une paroi de poche et lesdits moyens de passage de liquide étant à l'intérieur de ladite poche et fixés dans ladite poche, et ledit canal de liquide étant en communication d'écoulement de liquide avec ladite ouverture dans ledit déversoir.

16. Le procédé décrit dans la revendication 15 dans lequel ladite étape consistant à positionner ledit moyen de passage de liquide à l'intérieur desdits moyens de paroi de poche comprend le positionnement, à l'intérieur desdits moyens de paroi de poche, d'un organe allongé, flexible (34) comportant un canal de liquide s'étendant le long de sa longueur, ledit canal de liquide étant ouvert vers l'intérieur de ladite poche le long de sa longueur.

17. Le procédé décrit dans la revendication 16 dans lequel ladite poche est formée par scellement à chaud et comprenant l'étape consistant à sceller à chaud ledit organe en place en même temps qu'est formée par scellement à chaud ladite poche.

18. Un procédé de fabrication d'un emballage contenant un liquide, comprenant une poche flexible (10) apte à être remplie d'un liquide qui doit être distribué depuis celle-ci, ladite poche comprenant un déversoir (20) à travers lequel ladite poche peut être remplie et vidée et caractérisé par l'étape consistant à disposer un moyen de passage (30) de liquide à l'intérieur de ladite poche et à l'y former d'un seul tenant en tant que partie d'un seul tenant de ladite poche en même temps que la formation de ladite poche, lesdits moyens de passage de liquide étant en communication d'écoulement de liquide avec ledit déversoir afin d'aider à retirer du liquide hors du sac et de constituer un passage de liquide hors de ladite poche lorsque ladite poche se plie progressivement.



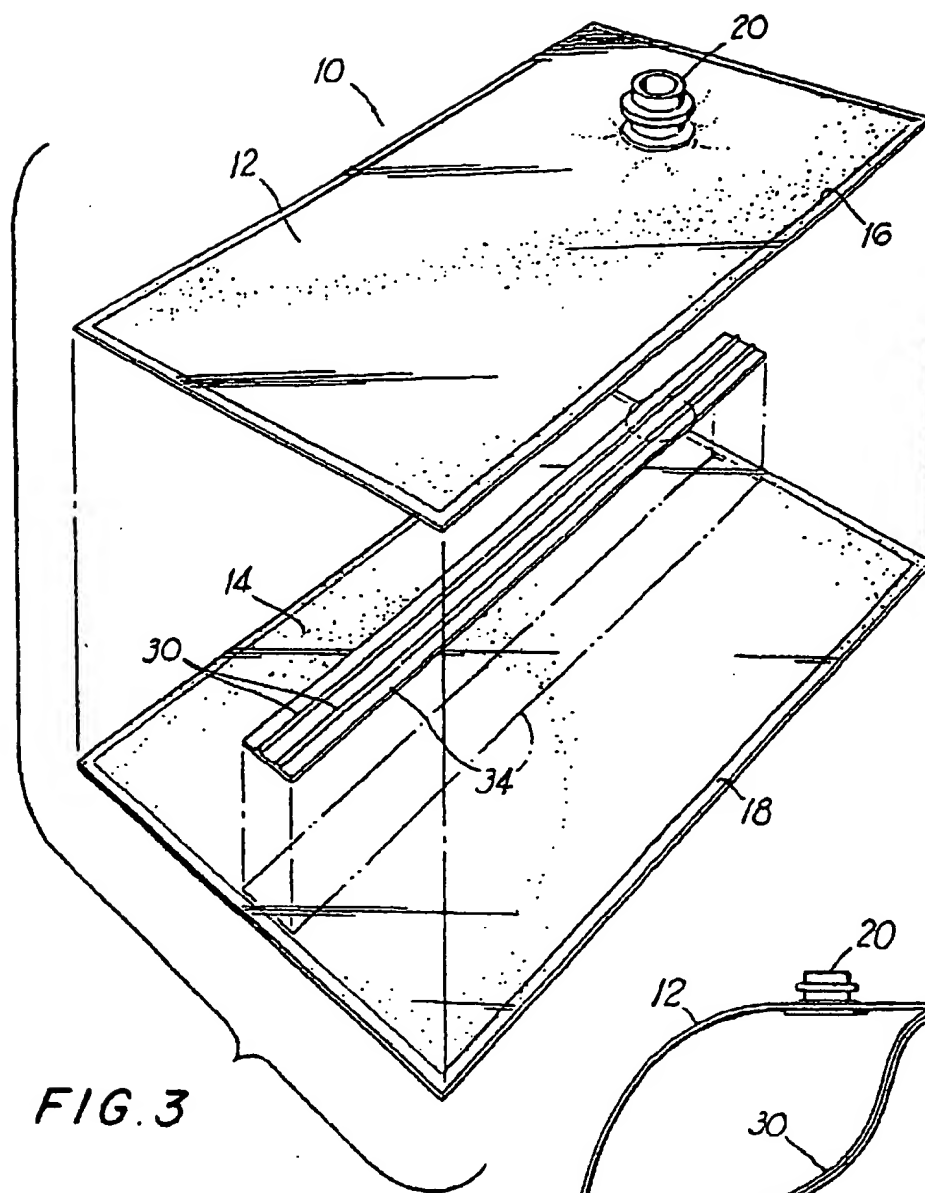


FIG. 3

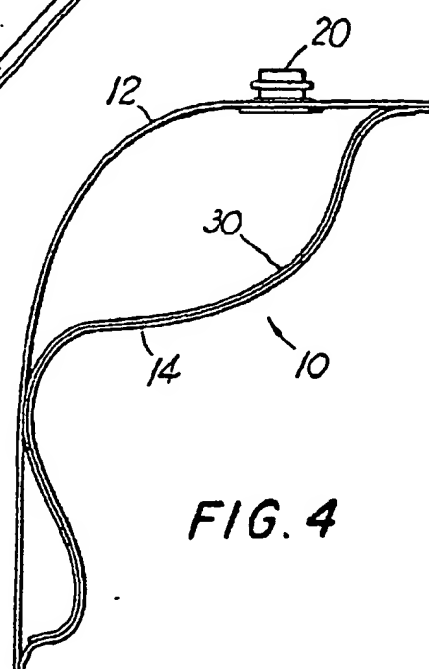


FIG. 4